

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 59210297  
PUBLICATION DATE : 28-11-84

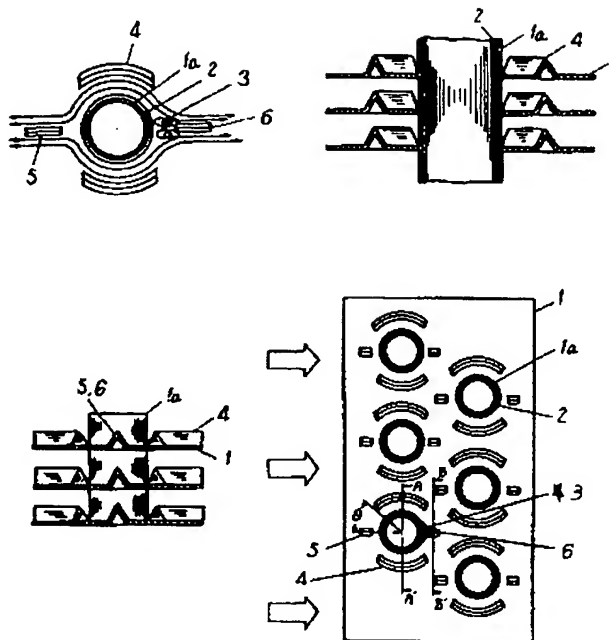
APPLICATION DATE : 20-04-84  
APPLICATION NUMBER : 59080476

APPLICANT : MATSUSHITA ELECTRIC IND CO LTD;

INVENTOR : KOMATSUBARA KOSUKE;

INT.CL. : F28F 1/32

TITLE : HEAT EXCHANGER WITH FIN



ABSTRACT : PURPOSE: To improve heat transfer rate in an air side heat transfer surface remarkably by decreasing a water stagnating zone in the after-stream of a heat transfer tube by the configuration of a fin.

CONSTITUTION: The fin 1 around the heat transfer tube 2 is provided with substantially arc protuberances 4, which prevent the separation of airstream, while the fins, located at the upstream side and downstream side of the heat transfer tube 2 in the direction of the rows of the tubes 2 are provided with the protuberances 5, 6 of the same length on the surface thereof. When the airstream flows to the arrow sign direction, the airstream which tried to separate from the surface of the tube 2 at a place having an angle  $\theta$  of  $\pm 70-80^\circ$  from the stagnation point of the surface of the tube 2 is prevented from separating by the protuberances 4, provided on the fin 1 around the heat transfer tube 2 covering the angle of  $60^\circ \leq |\theta| \leq 120^\circ$ , flows along the surface of the heat transfer tube 2, decreases the water stagnating zone 3 in the backwash of the heat transfer tube 2, collides against the protuberance 6 located in the after-stream of the tube 2, a part of the airstream flows to the downstream side together with a main stream and the other part of the airstream is involved in the after-stream of the tube 2 to activate the vortex of remaining water zone 3, then, flows out to the downstream, therefore, the heat transfer performance of the heat exchanger may be improved remarkably.

COPYRIGHT: (C)1984,JPO&Japio

BEST AVAILABLE COPY